WILLIAMS GATEWAY AIRPORT

Chapter Two
AVIATION DEMAND FORECASTS

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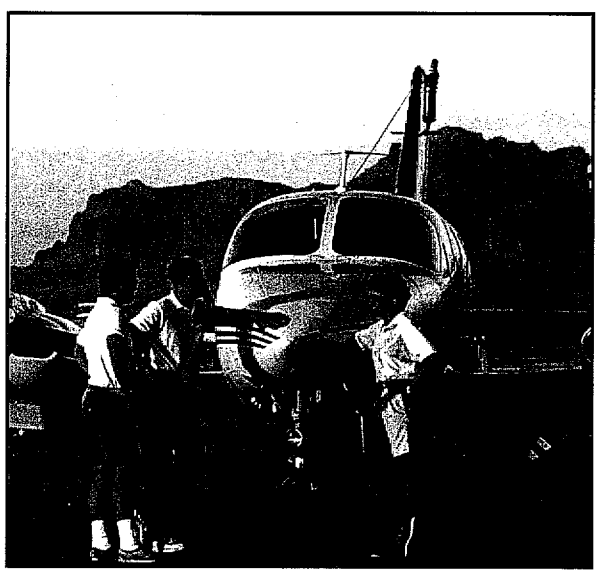
AVIATION DEMAND FORECASTS

WILLIAMS GATEWAY AIRPORT

Facility planning must begin with the definition of the demand that may reasonably be expected to occur over the twenty-year planning period. In airport master planning this involves forecasts of aviation activity indicators that define the level of airport demand. Forecasts of commercial service, air cargo, military, and general aviation activity are used as the basis for facility planning, financial projections, and environmental analysis.

It is virtually impossible to predict with certainty year-to-year fluctuations of activity when looking twenty years into the future. Because aviation activity can be affected by many influences at the local, regional, and national level, it is important to remember that forecasts are to serve only as guidelines and planning must remain flexible enough to respond to unforeseen facility needs. This makes it important to review the airport's activity on a regular basis to determine if changes to the guidelines are necessary.

The last master plan was undertaken as Williams Air Force Base was closing and before Williams Gateway Airport opened. The following forecast analysis examines recent developments, historical information since the airport became operational in 1994, and current aviation trends for Williams Gateway Airport to provide an updated set of aviation demand projections. The intent is to permit the Williams Gateway Airport Authority to make the planning adjustments necessary to ensure that the facility accommodates projected demands in an efficient and cost effective manner.



NATIONAL AVIATION TRENDS

Each year, the Federal Aviation Administration (FAA) publishes it's national aviation forecast. Included in this publication are forecasts for major air carriers, regional/commuters, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and by the general public. The current edition when this chapter was prepared was *FAA Aviation Forecasts - Fiscal Years 1998-2009*. The forecast uses the economic performance of the United Sates as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

For the U.S. aviation industry, the outlook for the next twelve years is for moderate economic growth, constant real fuel prices, and low-to-moderate inflation. Based on these assumptions, aviation activity by fiscal year 2009 is forecast to increase by 18.9 percent at combined FAA and contract towered airports and 24.6 percent at air route traffic control centers. The general aviation active fleet is projected to increase by almost 12.5 percent while general aviation hours flown are forecast to increase by 18.1 percent. Scheduled domestic passenger enplanements are forecast to increase 53.0 percent -- air carriers increasing 51.5 percent and regional/commuters growing by 89.0 percent.

COMMERCIAL AVIATION

The commercial aviation industry recorded its fourth consecutive year of strong traffic growth in 1997. To a large extent, growth in both domestic and international markets continue to be driven by the continued strong expansion in the U.S. and world economies. Domestic passenger enplanements grew by 3.4 percent, while load factors established an all-time high of 68.9 percent.

The financial performance of the U.S. commercial airlines has shown dramatic improvement over the past four years. Between 1990 and 1993, U.S. carriers' cumulative operating losses totaled nearly $5 billion, while net losses totaled over $11 billion. However, over the past four years, the industry has reported cumulative operating profits of almost $21.7 billion, while net profits have totaled over $9.4 billion. The industry will need similar or higher profits over the next several years if the industry is to be able to finance the replacement and new aircraft needed to accommodate future growth and meet the federally mandated noise regulations.

New aircraft deliveries totaled 623 in FY 1997, a 36.2 percent increase over the same period in 1996. The relatively large increase in new aircraft deliveries in 1997 is due, in large part, to the industry's dismal financial performance during the early 1990s, a period during which there were relatively few orders for new aircraft. As such, new aircraft deliveries slowed considerably during the 1995-96 period.

The demand for narrowbody aircraft continues to outpace the demand for widebody aircraft, accounting for nearly 60 percent of deliveries last year. However, this does not reflect the increasing demand for the new 30 to 75 seat regional jets among the commuter airlines. Although the number of regional jets in worldwide service now total less than 400, orders for these aircraft currently total in excess of 700.

While there are a number of positive signs that point towards a continuation of the current rebound in commercial aviation, there are also a number of uncertainties that could limit the growth of the economy, and ultimately, the demand for aviation services. These include higher fares being paid by business travelers, increasing personal debt which may affect discretionary travel, and continuing stagnation in middle class incomes.

The FAA's projections for domestic and international commercial service passenger enplanements indicate relatively strong growth. Domestic enplanements are projected to grow at an average annual rate of 3.5 percent through the year 2009. International enplanements are projected to grow at an average annual rate of 5.8 percent. **Exhibit 2A** graphically presents the FAA's commercial service forecasts.

REGIONAL/COMMUTER AIRLINES

The regional/commuter airline industry is defined as the air carriers providing regularly scheduled passenger service with fleets composed primarily of aircraft having 60 seats or less. The regional/commuter industry has been in a period of transition since the mid-1980s. Dramatic growth in code-sharing agreements with the major carriers, followed by a wave of air carrier acquisitions and purchases of equity interests, has resulted in the transfer of large numbers of short-haul jet routes to their regional partners. This transfer of routes has fueled the regional industry's historically high rate of growth over the past decade.

The traffic statistics for 1997, which reflect an increase in enplanements of 3.0 percent, actually understate the level of growth. This is the result of an enforcement of regional/commuter data reporting requirements that had not been strictly enforced in the past. The actual growth rate in 1997 was probably 4.5 to 5.0 percent.

Industry growth is expected to continue to outpace that of the larger commercial air carriers. The introduction of new state-of-the-art aircraft, especially high-speed turboprops and regional jets with ranges of up to 1,000 miles, is expected to open up new opportunities for growth in non-traditional markets. However, the primary role of the regional airline industry will remain that of feeding traffic to the major and national carriers even as they expand into markets with longer route segments.

The increased use of regional jets is expected to lead to another round of route rationalization by the larger commercial carriers, although this phenomenon is expected to diminish considerably in 2000 and beyond.

Passenger enplanements are expected to increase at an average annual rate of 5.5 percent during FAA's 12-year forecast period, with annual enplanements increasing from 61.9 million in 1997 to 117.0 million by 2009. The average seats per aircraft is also projected to grow, from 31.2 seats in 1997 to 40 seats in 2009. **Exhibit 2B** depicts passenger and fleet mix forecasts.

GENERAL AVIATION

By most statistical measures, general aviation recorded its third consecutive year of growth. Following more than a decade of decline, the general aviation industry was revitalized with the passage of the General Aviation Revitalization Act in 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture). This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability and a renewed optimism for the industry. The high cost of product liability insurance was a major factor in the decisions by many American aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

According to the General Aviation Manufacturers Association (GAMA), aircraft shipments and billings grew for the third consecutive year in 1997, following fourteen years of annual declines. In 1997, general aviation aircraft manufacturers shipped a total of 1,569 aircraft totaling $4.7 billion. For 1997, aircraft shipments were up 38.8 percent and billings up 49.5 percent over 1996. In 1996, general aviation aircraft manufacturers shipped a total of 1,130 aircraft totaling $3.1 billion.

For 1997, piston engine aircraft shipments were up 64.2 percent and turbine engine aircraft shipments up 10.2 percent. Single-engine piston aircraft recorded the single largest gain, growing 70.8 percent in 1997 while turbofan aircraft shipments increased 44.4 percent. Multi-engine piston aircraft shipments grew 14.3 percent. Only turboprop aircraft registered a decline in shipments in 1997 (18.3 percent).

Despite a small decline in the number of active pilots, student pilot starts were up 1.3 percent in 1997, following a 6.3 percent decline in 1996. These student pilots are the future of general aviation and are one of the key factors impacting the future direction of the general aviation industry. This increase combined with the increases in piston-powered aircraft shipments and aircraft production are a signal that many of the industry initiated programs to revitalize general aviation may be taking hold.

For 1998, GAMA has indicated that general aviation billings in the first quarter of 1998 were the highest in history. Billings have increased from $886 million for the first quarter of 1997 to $1.1 billion for the first quarter of 1998, equating to a 24.5 percent increase over the previous year. GAMA also indicates that aircraft shipments for the first quarter of 1998 increased by 92.4 percent over the same period in 1997. Aircraft shipments rose to 456,

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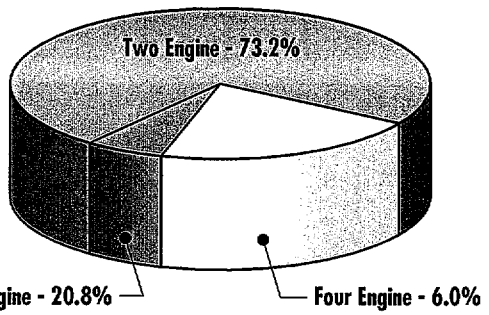
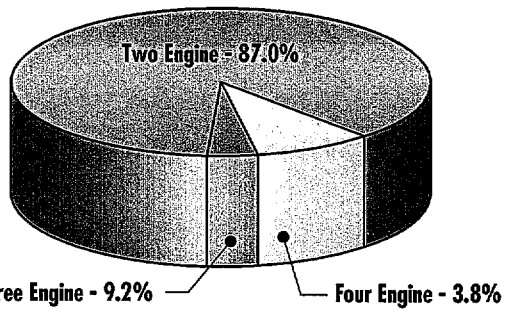
COMMERCIAL PASSENGER AIRCRAFT

NARROW BODY

1997 - 4,079 Aircraft

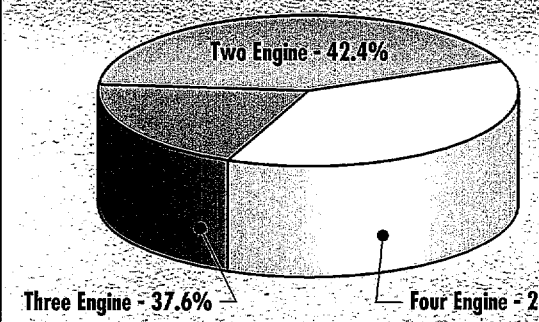


2009 - 5,888 Aircraft

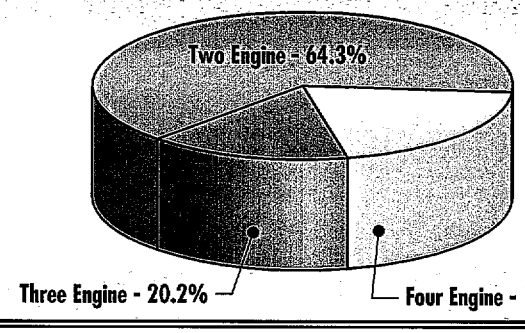


WIDE BODY

1997 - 874 Aircraft

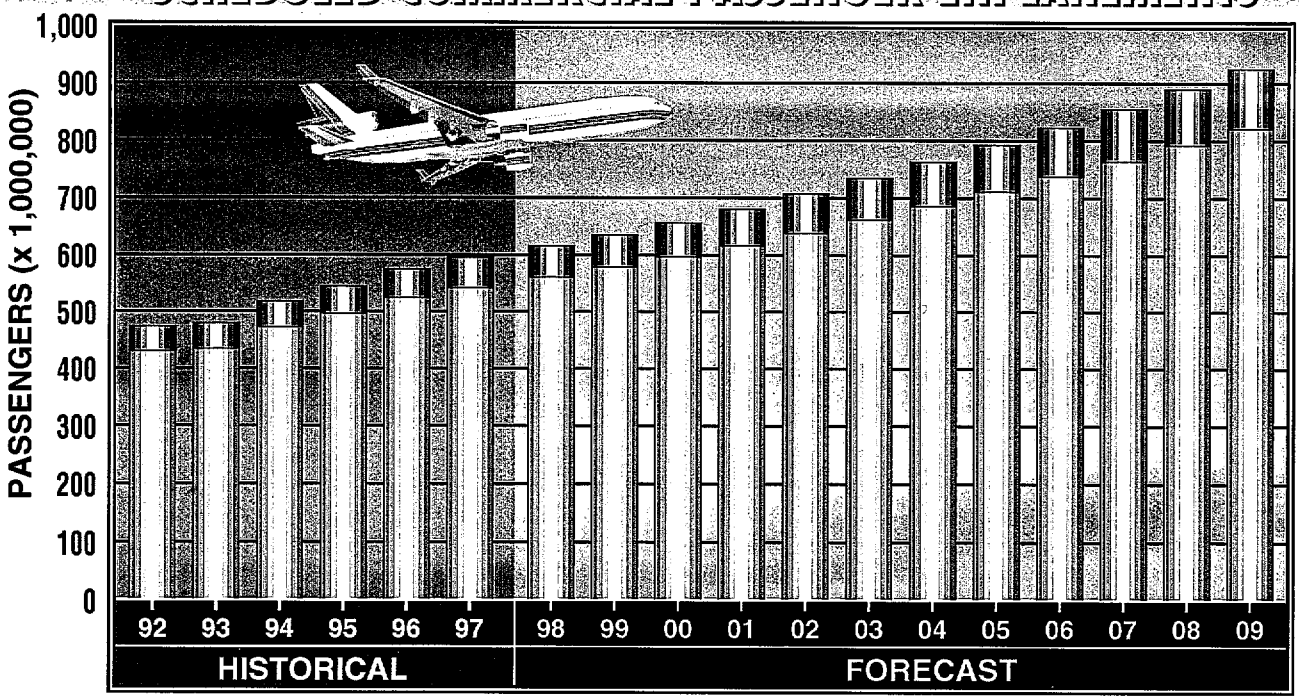


2009 - 1,531 Aircraft



Source: FAA Aviation Forecasts, FY 1998-2009

SCHEDULED COMMERCIAL PASSENGER ENPLANEMENTS



Source: Form 41, U.S. Department of Transportation/
FAA Aviation Forecasts, FY 1998-2009

WILLIAMS GATEWAY AIRPORT

Exhibit 2A
U.S. COMMERCIAL FORECASTS

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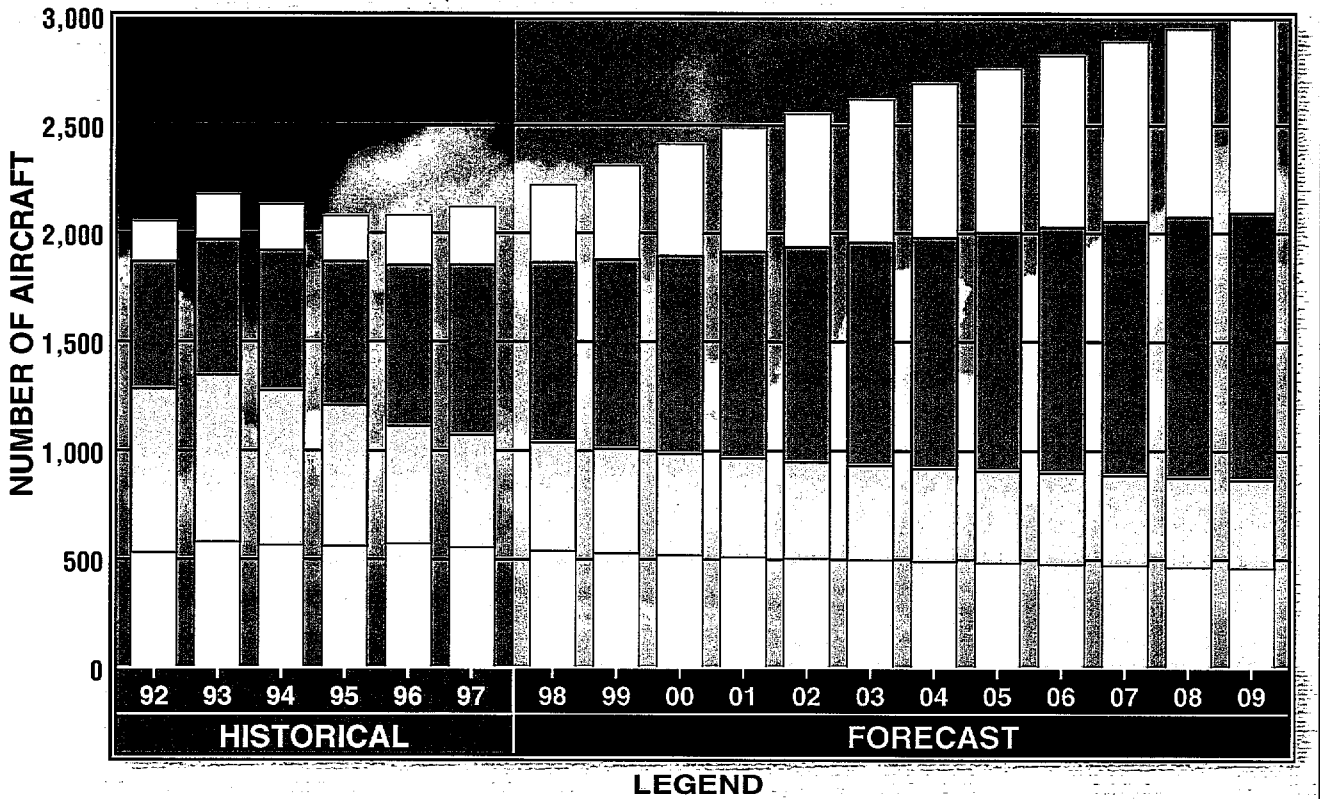
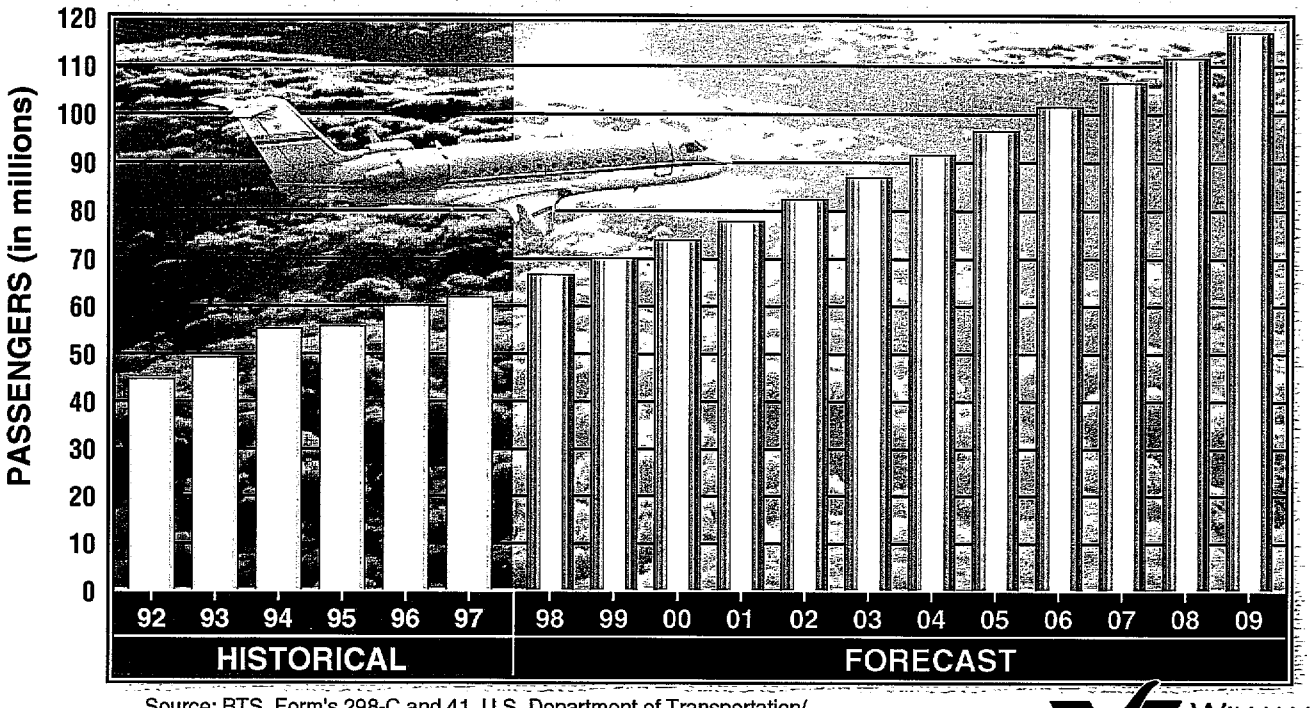
REGIONAL/COMMUTER PASSENGER AIRCRAFT



Source: FAA Aircraft Utilization and Propulsion Reliability Report/FAA Aviation Forecasts, FY 1998-2009

SCHEDULED REGIONAL/COMMUTER PASSENGER ENPLANEMENTS



Source: BTS, Form's 298-C and 41, U.S. Department of Transportation/
FAA Aviation Forecasts, FY 1998-2009

WILLIAMS GATEWAY AIRPORT

Exhibit 2B
U.S. REGIONAL/COMMUTER FORECASTS

up from 237 in 1997, and jet deliveries reached 82 units, up 30.2 percent over 1997 first quarter shipments.

The most notable trend in general aviation is the continued strong use of general aviation aircraft for business and corporate uses. According to the FAA, general aviation operations and general aviation aircraft handled at enroute traffic control centers increased for the sixth consecutive year, signifying the continued growth in the use of the more sophisticated general aviation aircraft. In 1996 (the latest year of recorded data), the number of hours flown by the combined use categories of business and corporate flying represented 22.5 percent of total general aviation activity. In 1990, the number of hours flown by the combined use categories of business and corporate flying represented 21.8 percent of total general aviation activity.

Manufacturer and industry programs and initiatives continue to revitalize the general aviation industry. The newest program "GA Team 2000" has the goal of 100,000 annual student pilot starts by the year 2000. The New Piper Aircraft company has created Piper Financial Services (PFS) to offer competitive interest rates and/or leasing of Piper aircraft.

The most striking industry trend is the continued growth in fractional ownership programs. Fractional ownership programs allow businesses and individuals to purchase an interest in an aircraft and pay for only the time that they use the aircraft. This has allowed many businesses and individuals to own and use general aviation aircraft for business and corporate uses. Aircraft manufacturers Raytheon, Bombardier, and Dassault Falcon Jets have all established fractional ownership programs. Industry leader Executive Jet Aviation has expanded their program to include Boeing Business Jets and Gulfstream Aircraft.

Exhibit 2C depicts the FAA forecast for active general aviation aircraft in the United States. The FAA forecasts general aviation active aircraft to increase at an average annual rate of 1.0 percent over the next 12 years, increasing from 187,312 in 1996 to 212,960 in 2009. Over the forecast period, the active fleet is expected to increase by almost 2,000 annually (this assumes approximately 2,000 annual retirements of older piston aircraft and new aircraft production at 4,000 annually). Turbine-powered aircraft are projected to grow faster than all other segments of the national fleet and grow 2.2 percent annually through the year 2008. This includes the number of turboprop aircraft growing from 5,309 in 1996 to 6,482 in 2009 and the number of turbojet aircraft increasing from 4,287 in 1996 to 6,228 in 2009. Amateur built aircraft are projected to increase at an average annual rate of 1.1 percent over the next twelve years, increasing from 16,198 in 1996 to 18,622 in 2009.

SOCIOECONOMIC PROJECTIONS

Local population and employment forecasts provide an indication of the potential for sustaining growth in aviation activity over the planning period. **Table 2A** summarizes historical and forecast data for Maricopa County and the City of Mesa and Towns of Queen Creek and Gilbert. As shown in the table, Maricopa County and each of these communities has enjoyed strong growth in population and employment in the past. The Maricopa Association of Governments, expects these trends to continue, albeit at a lower annual growth rate. Between 1980 and 1995, the combined populations of Mesa, Gilbert, and Queen Creek grew at an average annual rate of 6.5 percent. The combined population of these communities is projected to grow at an average annual rate of 2.7 percent through the year 2020. For employment, the trends are similar. Between 1990 and 1995, the combined employment for Mesa, Gilbert, and Queen Creek grew at an average annual rate of 13.7 percent. The combined employment of these communities is projected to grow at an average annual rate of 2.4 percent through the year 2020.

TABLE 2A
Historical and Forecast Population and Employment

Year	Maricopa County	Mesa	Gilbert	Queen Creek	Total Mesa, Gilbert, Queen Creek
Population					
Historical					
1980	1,509,262	163,594	5,717	1,378	171,049
1990	2,213,695	288,104	29,122	2,667	319,893
1995	2,528,700	372,378	65,460	5,108	442,946
Forecast					
2000	2,954,150	425,238	108,534	7,376	541,148
2005	3,329,550	480,164	132,812	10,659	623,635
2010	3,709,575	540,608	174,690	13,965	729,263
2015	4,101,775	567,741	201,393	17,205	786,339
2020	4,516,100	593,962	244,842	20,505	859,309
Employment					
Historical					
1990	975,037	93,561	6,060	754	100,375
1995	1,264,800	128,373	16,838	1,439	146,650
Forecast					
2000	1,482,983	164,772	21,230	2,015	188,017
2005	1,678,093	187,277	35,593	2,807	225,677
2010	1,877,045	214,936	45,808	7,103	267,847
2015	2,042,684	238,241	58,900	8,432	305,573
2020	2,212,889	264,158	63,748	9,796	337,702

Source: Maricopa Association of Governments (MAG)

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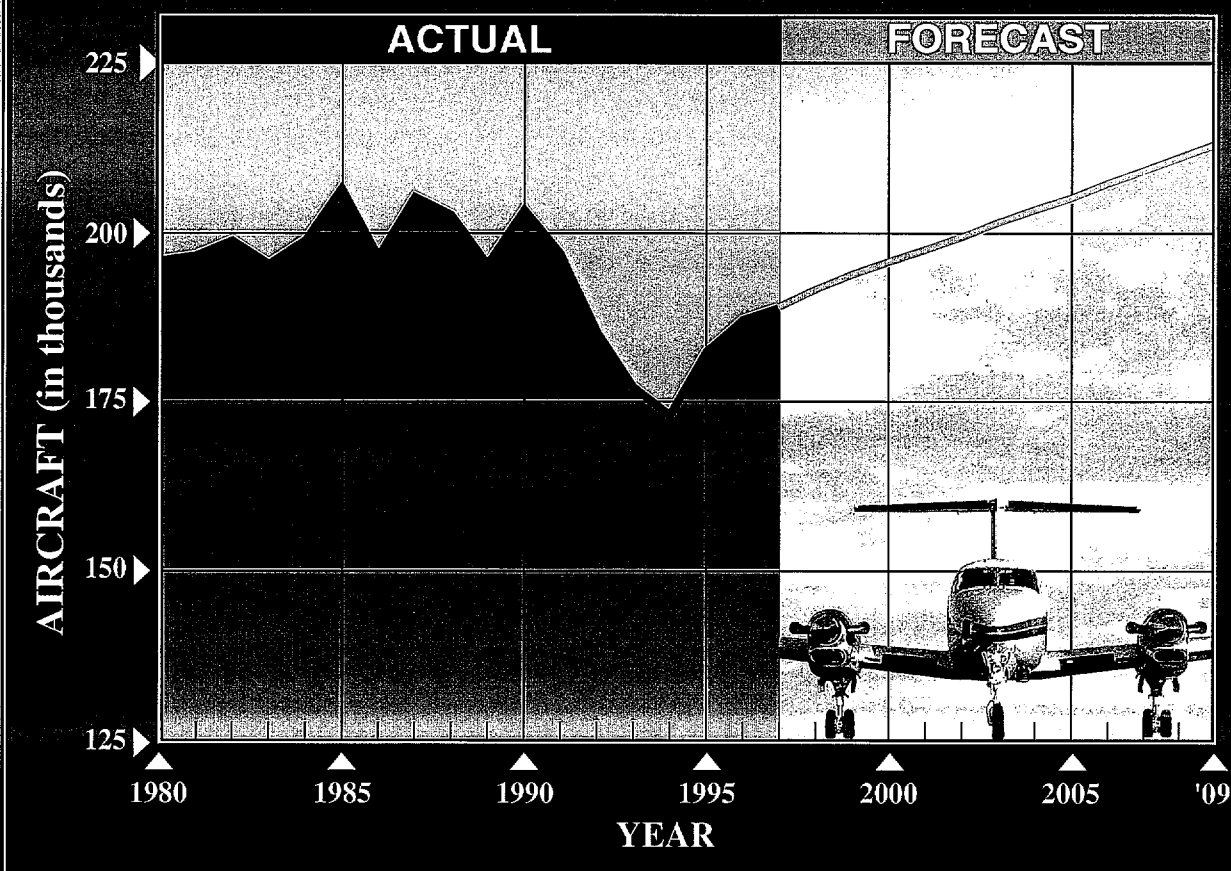
ACTIVE GENERAL AVIATION AIRCRAFT



U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

As of January 1	FIXED WING				ROTORCRAFT		Experimental	Other	Total
	PISTON		TURBINE						
	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine			
1997	136.7	15.8	5.3	4.4	2.4	4.0	16.4	4.2	189.3
2000	141.2	16.0	5.5	4.9	2.3	4.2	17.1	4.3	195.6
2003	145.3	16.2	5.8	5.4	2.2	4.4	17.7	4.4	201.4
2006	149.5	16.5	6.1	5.8	2.2	4.5	18.1	4.5	207.2
2009	153.7	16.6	6.5	6.2	2.1	4.6	18.6	4.6	212.9

Source: FAA Aviation Forecasts, Fiscal Years 1998-2009.

Notes: Detail may not add to total because of independent rounding. An active aircraft must have a current registration and it must have been flown at least one hour during the previous calendar year.

WILLIAMS GATEWAY AIRPORT

Exhibit 2C
U.S. ACTIVE GENERAL AVIATION AIRCRAFT FORECASTS

FORECASTING APPROACH

The development of aviation forecasts proceeds through both analytical and judgmental processes. A series of mathematical relationships are tested to establish statistical logic and rationale for projected growth. However, the judgement of the forecast analyst, based upon professional experience, knowledge of the aviation industry, and their assessment of the local situation, is important in the final determination of the preferred forecast.

It is important to note that one should not assume a high level of confidence in forecasts that extend beyond five years. Facility and financial planning usually require at least a ten-year preview, since it often takes more than five years to complete a major facility development program. However, it is important to use forecasts which do not overestimate revenue-generating capabilities or understate demand for facilities needed to meet public (user) needs.

A wide range of factors are known to influence the aviation industry and can have significant impacts on the extent and nature of air service provided in both the local and national market. Technological advances in aviation have historically altered, and will continue to change, the growth rates in aviation demand over time. The most obvious example is the impact of jet aircraft on the aviation industry, which resulted in a growth rate that far exceeded expectations. Such changes are difficult, if not impossible to predict, and there is simply no mathematical way to estimate their impacts. Using a broad spectrum of local, regional and national socioeconomic and aviation information, and analyzing the most current aviation trends, forecasts are presented in the following sections.

COMMERCIAL SERVICE FORECASTS

To determine the types and sizes of facilities necessary to accommodate airline activity, three basic elements of this activity must be forecast. These forecast elements include: annual enplaned passengers; fleet mix; and annual aircraft operations.

ANNUAL ENPLANED PASSENGERS

The forecast of annual enplaned passengers begins with a review of existing regional air service and forecast passenger activity for the Phoenix Metropolitan area.

Regional Air Service

Phoenix Sky Harbor International Airport currently provides all scheduled airline service for the Phoenix metropolitan area. Phoenix Sky Harbor is presently served by 17 major airlines and two regional airlines. Nonstop scheduled service is available to 87 cities in the United States, Canada, Mexico, Germany, and England. America West Airlines and Southwest Airlines both operate major connecting hubs at Phoenix Sky Harbor.

Table 2B summarizes historical total passenger data (enplaning and deplaning passengers) for Phoenix Sky Harbor International Airport. As shown in the table, the airport has enjoyed a strong passenger growth since 1970. In fact, over this period, total passenger traffic has increased at an average annual growth rate of 9.7 percent.

TABLE 2B
Total Passenger Traffic
Phoenix Sky Harbor International Airport

Year	Total Passengers	Average Annual Growth Rate
1970	2,871,958	N/A
1980	6,585,854	8.7%
1990	21,718,068	12.7%
1997	30,677,210	5.1%

Source: Phoenix Sky Harbor International Airport.

While Phoenix Sky Harbor International Airport serves as a connecting hub for America West Airlines and Southwest Airlines, connecting passengers account for only a portion of total enplanements. As shown in **Table 2C**, while the number of connecting passengers has grown as a percentage of total enplanements, origin/destination passengers still account for nearly 70 percent of total enplanements.

Table 2C
Enplaned Passengers
Phoenix Sky Harbor International Airport

Year	Total	Originating	% of Total	Connecting	% of Total
1970	1,465,880	1,113,110	76%	352,770	24%
1995	13,452,496	9,309,127	69%	4,143,369	31%

Source: Phoenix Sky Harbor International Airport Master Plan, Leigh Fisher Associates, May 1996

Table 2D summarizes domestic originating air carrier passenger enplanement forecasts for Phoenix Sky Harbor International Airport. As shown in the table, originating passengers are forecast to increase at an average annual rate of 3.8 percent through the year 2020.

TABLE 2D
Forecast Domestic Originating Air Carrier Enplanements
Phoenix Sky Harbor International Airport

Year	Domestic Air Carrier Enplanements	Average Annual Growth Rate
Historical		
1995	9,309,127	N/A
Forecast		
2000	12,458,000	6.0%
2005	15,377,000	4.3%
2010	17,826,000	3.0%
2015	20,565,000	2.9%
2020	23,610,000	2.8%

Source: Phoenix Sky Harbor International Airport Master Plan, Leigh Fisher Associates, May 1996

Commercial Air Service At Williams Gateway Airport

The potential for commercial passenger air service at Williams Gateway Airport has been examined by the Kiehl Hendrickson Group and was published in a 1997 study titled *Arizona's Emerging Airport: Williams Gateway*. The report noted that Williams Gateway Airport has the potential to serve scheduled passenger service in the future due to the very strong and growing commercial passenger air service market in the Phoenix metropolitan area. The Kiehl Hendrickson Group noted that the large local origin-destination traffic - driven by the growing local population and economy, low fare carriers, and the fact that Phoenix is a prime leisure destination - provides the best opportunity for Williams Gateway Airport to initiate and sustain commercial passenger air service.

The Kiehl Hendrickson Group estimated that Williams Gateway Airport could initially serve between 2,700 and 5,400 passengers weekly with a combination of charter and scheduled service activities. The study's analysis concluded that charter operators serving groups, package tours, and international and domestic markets without existing scheduled service provided the best opportunity for Williams Gateway Airport to initially position itself as a commercial service airport. Carriers specializing in serving niche markets (such as commuters from the Los Angeles area to the East Valley) provided a similar, yet smaller, opportunity for establishing commercial passenger air service at Williams Gateway Airport.

In particular, the study recognized the following strengths for Williams Gateway Airport:

- Location and proximity to population growth, solid potential for driving economic growth in the East Valley.

- Operating cost advantages versus Phoenix Sky Harbor International Airport. While Southwest Airlines and America West Airlines have substantial investments in Phoenix Sky Harbor, other carriers may be receptive to examining operating cost advantages, particularly charters and niche operators.

- The likelihood of increasing amounts of delay and noise-related constraints at Phoenix Sky Harbor International Airport and the advantage of available capacity with little airside traffic congestion at Williams Gateway Airport.

- The potential for the establishment of a commuter rail line from downtown Phoenix, the Grand Avenue link, and downtown Tempe and the Arizona State University Campus.

- Potential operating flexibility at Williams Gateway Airport.

- A strong and growing base of academic and aviation-related commercial businesses.

Along with these strengths, the study also acknowledged the following weaknesses for Williams Gateway Airport:

- Under-developed passenger terminal facility.

- Unfinished Federal Aviation Administration (Federal Aviation Regulation Part 139) certification.

- Undeveloped passenger support services.

- The relatively remote location of the airport and lack of readily-accessible and convenient freeway access.

- On site access challenges.

- Little or confusing name recognition with potential air passengers, airlines and travel managers.

The Williams Gateway Airport Authority is refurbishing Building 15 to serve as an interim passenger terminal building. The proposed floorplan design of the passenger terminal building provides for passenger support services such as rental car, food service, and ground transportation options. Limited FAA Part 139 certification was completed in 1998. Regional transportation planning includes the development of the Santan Freeway which will pass within one-mile of the airport. In addition, the WGAA follows an aggressive marketing program to promote Williams Gateway Airport across the country.

While the WGAA is positioning itself to accommodate commercial air passenger service, the Kiehl Hendrickson Group study noted that the dominance of low-fare carriers at Phoenix Sky Harbor International Airport, expansion of international services to Phoenix as among factors which Williams Gateway Airport must overcome in establishing commercial air passenger service. The study also noted that the City of Phoenix's plans to accommodate growth and increase capacity at Phoenix Sky Harbor International Airport through the potential development of a fourth runway after 2015 (pending further study) and expansion of existing terminal facilities.

Williams Gateway Airport Forecast Enplanements

The Kiehl Hendrickson study noted that many cities across the country support more than one commercial service airport. **Table 2E** summarizes the cities cited in the report and examines the origin-destination data for these key cities.

The forecast of passenger enplanements for Williams Gateway Airport was developed using actual market shares realized by airports in these cities served by more than one commercial service airport. Three different scenarios of passenger enplanements for Williams Gateway Airport were prepared by applying an actual market share realized by an airport in a market with more than one commercial airport to forecast domestic originating air carrier passengers in the Phoenix metropolitan area. The scenarios examine the enplanement potential for Williams Gateway Airport should the airport be able to capture a similar portion of the local Phoenix origin-destination traffic as other airports have in similar markets.

Future commercial air passenger service at Williams Gateway Airport will be influenced by travel time to Phoenix Sky Harbor and the relative time savings for travelers using Williams Gateway Airport, population density in the East Valley, air service at Williams Gateway Airport, and congestion at Phoenix Sky Harbor which will increase delays and travel inconveniences.

Scenario I represents Williams Gateway Airport capturing a small portion of the origin/destination market, similar to what is currently experienced in the Tampa/St. Petersburg area. For Williams Gateway Airport this would equate to Phoenix Sky Harbor serving the majority of the origin destination market for the Phoenix metropolitan area. In this scenario, the relative attractiveness of air fares and destinations would not be comparable to Phoenix Sky Harbor and travel times to the Phoenix Sky Harbor would be minimal.

Scenario II represents the Williams Gateway Airport ultimately capturing 12 percent of the metropolitan area's origin-destination market. Presently, Providence, Rhode Island captures this portion of the Boston, Massachusetts area's origin-destination traffic. Under this scenario, while Williams Gateway Airport would not necessarily serve the same markets as Phoenix Sky Harbor

TABLE 2E
Comparison of Origin/Destination Data (Selected Cities)

	1992		1994		1996	
	O&D Passengers	% of Total	O&D Passengers	% of Total	O&D Passengers	% of Total
BOSTON						
Logan International	15,617,160	89.1%	17,716,030	89.3%	19,284,950	89.2%
Providence, Rhode Island	1,916,390	10.9%	2,112,180	10.7%	2,346,700	10.8%
Total	17,533,550	100.0%	19,828,210	100.0%	21,631,650	100.0%
CHICAGO						
O'Hare International	25,358,640	87.9%	27,285,190	78.0%	30,578,660	79.0%
Chicago-Midway	3,442,430	11.9%	7,585,990	21.7%	8,099,840	20.9%
Chicago Area	62,640	0.2%	120,800	0.3%	36,600	0.1%
Meigs Field	2,020	0.0%	3,190	0.0%	60	0.0%
Total	28,865,730	100.0%	34,995,170	100.0%	38,715,160	100.0%
DALLAS/FORT WORTH						
Dallas/Fort Worth International	16,468,260	78.1%	17,149,560	76.2%	20,082,210	78.7%
Love Field	4,612,510	21.9%	5,347,020	23.8%	5,431,230	21.3%
Total	21,080,770	100.0%	22,496,580	100.0%	25,513,440	100.0%
DENVER						
Denver International	11,944,630	90.2%	14,122,200	91.1%	15,312,010	76.9%
Colorado Springs	1,299,390	9.8%	1,375,150	8.9%	4,588,070	23.1%
Total	13,244,020	100.0%	15,497,350	100.0%	19,900,080	100.0%
HOUSTON						
Houston Intercontinental	7,800,020	53.0%	8,960,440	57.0%	11,458,570	63.1%
Hobby Airport	6,850,810	46.5%	6,695,230	42.6%	6,607,200	36.4%
Ellington Field	70,990	0.5%	77,440	0.5%	88,190	0.5%
Total	14,721,820	100.0%	15,733,110	100.0%	18,153,960	100.0%
LOS ANGELES						
Los Angeles International	26,872,450	63.8%	29,403,000	63.2%	34,689,490	65.8%
Burbank	3,696,020	8.8%	4,591,300	9.9%	4,622,210	8.8%
Ontario	5,692,860	13.5%	6,020,410	12.9%	6,030,070	11.4%
Orange County	5,132,100	12.2%	6,117,310	13.2%	7,109,900	13.5%
Long Beach	750,650	1.8%	384,540	0.8%	265,350	0.5%
Total	42,144,080	100.0%	46,516,560	100.0%	52,717,020	100.0%
MIAMI						
Miami International	11,452,460	65.9%	12,595,280	60.0%	14,636,630	61.5%
Fort Lauderdale	5,925,620	34.1%	8,413,890	40.0%	9,149,110	38.5%
Total	17,378,080	100.0%	21,009,170	100.0%	23,785,740	100.0%
NORFOLK, VIRGINIA						
Norfolk	2,156,480	90.5%	2,961,990	92.6%	2,547,480	90.3%
Newport News	226,380	9.5%	236,360	7.4%	274,610	9.7%
Total	2,382,860	100.0%	3,198,350	100.0%	2,822,090	100.0%
SAN FRANCISCO						
San Francisco International	19,684,970	64.5%	20,070,700	57.7%	23,853,270	57.3%
Oakland International	5,807,030	19.0%	7,329,670	21.1%	8,639,930	20.8%
San Jose	5,027,590	16.5%	7,394,620	21.3%	9,116,110	21.9%
Total	30,519,590	100.0%	34,794,990	100.0%	41,609,310	100.0%
TAMPA/ST. PETERSBURG						
Tampa International	7,494,620	99.3%	9,738,720	98.0%	10,910,180	96.7%
St. Petersburg International	51,370	0.7%	199,150	2.0%	368,640	3.3%
Total	7,545,990	100.0%	9,937,870	100.0%	11,278,820	100.0%

Source: Domestic City Summary, Air Transport Association of America

or with the same frequency, travelers could choose Williams Gateway Airport for travel to major destinations. Travel time and delays would begin to influence travel where air fares were similar.

Scenario III examines enplanement potential should Williams Gateway Airport be able to capture a higher share (23 percent) of the Phoenix metropolitan area's origin-destination market, similar to Chicago-Midway, which captures approximately 21 percent of the Chicago area market. To capture this share of the origin-destination market, air service at Williams Gateway Airport would need to be comparable in price, major destinations served, and travel time. Passenger inconveniences would be at levels sufficient enough to influence the traveler's choice of airports.

Table 2F summarizes the passenger enplanement forecasts for Williams Gateway Airport. In all likelihood, actual activity will not follow any one of the projections. It is more likely that annual enplanement levels will fluctuate within the range of the projections depicted on **Exhibit 2D**. Thus, these lines serve more as a planning envelope. The planning envelope reflects a reasonable range for future annual enplanement levels at the airport. With this in mind, the time-based projections of anticipated growth should serve only as a guide. At any given time over the planning period, the actual level of enplanements could fall within the envelope area.

The preferred planning forecast represents a mid-range forecast between Scenario I and Scenario II to account for annual fluctuations in enplanement levels and considers the initial enplanement potential outlined in the Kiehl Hendrickson Group study. Typically, total deplanements roughly equal total enplanements, which has been assumed for planning purposes.

FLEET MIX AND OPERATIONS FORECASTS

The commercial service fleet mix defines a number of key parameters in airport planning, including critical aircraft, stage length capabilities, and terminal area gate configurations. A fleet mix projection for Williams Gateway Airport has been developed after reviewing the changes which have taken place over the past few years in the fleet composition, and the most recent information available on the new aircraft being purchased by air carriers.

Changes in equipment, airframes, and engines have always had a significant impact on airlines and airport planning. There are many on-going programs by manufacturers to improve performance characteristics. These programs are focusing on improvements in fuel efficiency, noise suppression, and the reduction of air emissions.

Regional/commuter airlines are transitioning to advanced turboprop aircraft and small regional jets to fit their respective market needs. The FAA views the introduction of regional jets as the most significant change in the future composition of regional/

commuter fleet. Smaller turboprop aircraft (19 seats or less) are projected to account for only one-fifth of the overall commuter fleet in the future.

TABLE 2F
Passenger Enplanement Forecasts

Year	Phoenix O&D Enplanements[1]	Williams Gateway Airport Enplanements							
		Scenario I		Scenario II		Scenario III		Planning Forecast	
2005	15,377,000	1.0%	153,800	3.0%	461,300	7.0 %	1,076,400	250,000	1.6%
2010	17,826,000	2.0%	356,500	6.0%	1,069,600	12.0%	2,139,100	650,000	3.6%
2015	20,565,000	3.0%	617,000	9.0%	1,850,900	18.0%	3,701,700	1,200,000	5.8%
2020	23,610,000	4.0%	944,400	12.0%	2,833,200	23.0%	5,430,300	2,000,000	8.5%

[1] Phoenix Sky Harbor International Airport Master Plan, Leigh Fisher Associates, May 1996

A commercial service fleet mix projection for the airport has been developed, considering the initial service opportunities identified by the Kiehl Hendrickson Group. The fleet mix projection accounts for the large air carrier aircraft typically used by charter services and the type of aircraft which could potentially be used to serve speciality markets. The largest transition in the fleet mix is expected to involve the greater use of regional jet aircraft through the planning period as more regional jets are introduced into the national fleet and air carriers integrate them more-fully into their schedules. Service by aircraft in the 251 seat and above range is expected to decline through the planning period as the older aircraft presently used by charter companies are retired and replaced with more efficient aircraft (such as the 757 and 767). **Table 2G** summarizes the commercial fleet mix and operations forecast for Williams Gateway Airport.

TABLE 2G
Commercial Fleet Mix and Operations Forecast

SEATING RANGE (Representative Aircraft)	2005	2010	2015	2020
0-50 (Saab 340)	5.0%	5.0%	5.0%	5.0%
51-100 (Regional Jet)	5.0%	5.0%	5.0%	8.0%
101-150 (Boeing 737)	28.0%	30.0%	32.0%	35.0%
151-200 (Boeing 757)	25.0%	25.0%	25.0%	25.0%
201-250 (Boeing 767)	22.0%	25.0%	28.0%	25.0%
251+ (McDonnell-Douglas DC-10)	15.0%	10.0%	5.0%	2.0%
SEATS PER DEPARTURE	171	166	161	152
BOARDING LOAD FACTOR	55.0%	56.0%	57.0%	58.0%
ENPLANEMENTS PER DEPARTURE	94	93	92	88
ANNUAL ENPLANEMENTS	250,000	650,000	1,200,000	2,000,000
ANNUAL DEPARTURES	2,700	7,000	13,100	22,700
ANNUAL OPERATIONS	**5,400**	**14,000**	**26,200**	**45,400**

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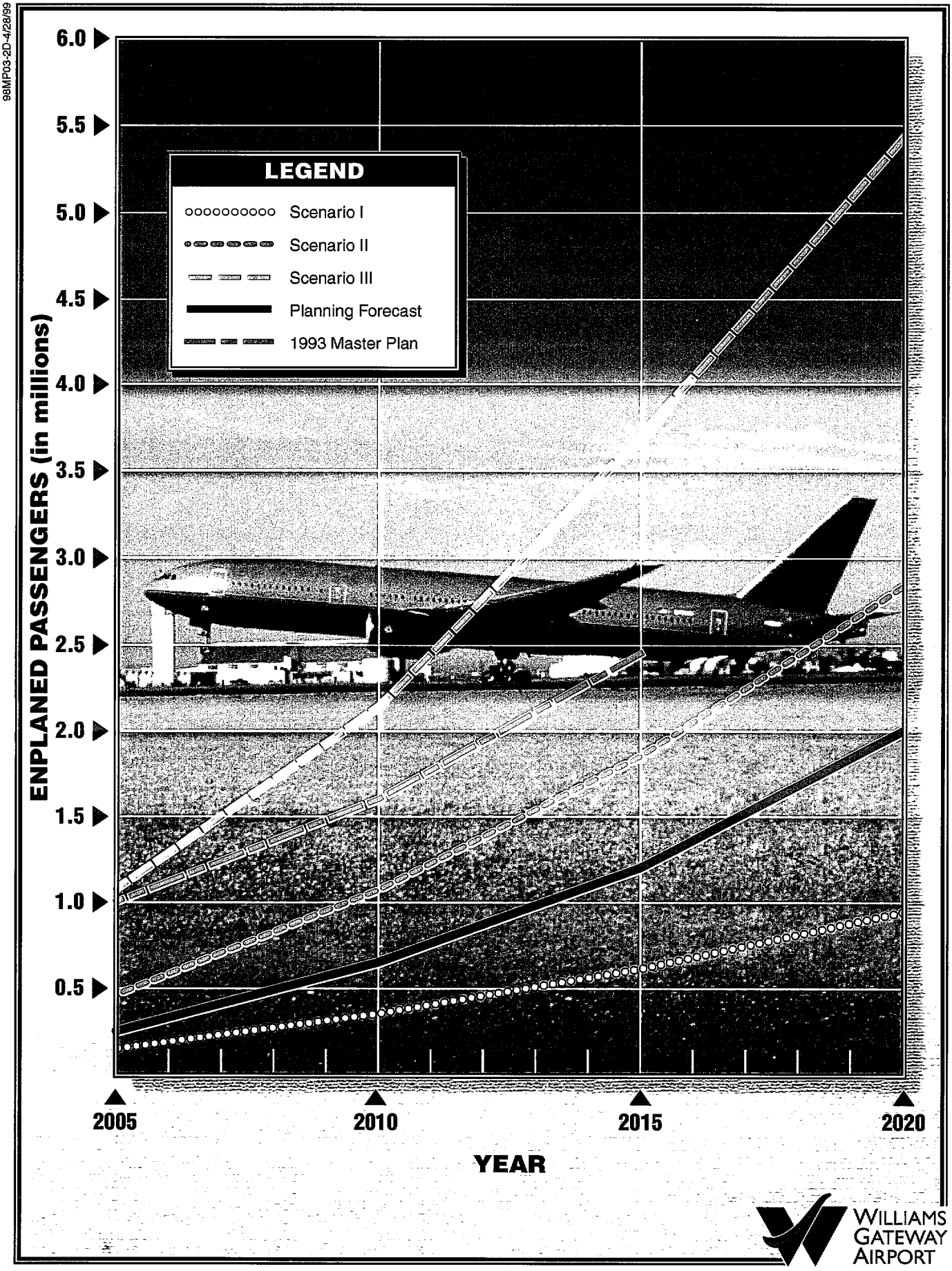

WILLIAMS GATEWAY AIRPORT

Exhibit 2D

PASSENGER ENPLANEMENT FORECAST

AIR CARGO FORECASTS

Air cargo is an encompassing term used to describe the combined activities of air mail and air freight/air express. The air cargo industry includes a diverse range of businesses providing a variety of different services supporting the movement of freight by air. This includes the all-cargo airlines, passenger airlines, freight forwarders and customs brokers, and air freight truckers.

The air cargo industry was deregulated in 1977, one year before passenger airline deregulation. Since deregulation, the composition of the carrier group providing cargo services has changed dramatically. Most notable is the emergence of the integrated all-cargo airlines such as FedEx, UPS, Airborne, and Emery. Integrated air carriers are so named because they integrate the functions of the traditional all-cargo airlines (airport-to-airport line-haul services) and freight forwarders (pickup and delivery services). Similar to the trends affecting passenger airline companies, the all-cargo airline market has developed with the "hub and spoke" system. Additionally, the domestic air freight product mix has changed dramatically from heavyweight shipments to small package express services. Furthermore, this product shift has lead to the all-cargo carriers dominance in the air freight industry. Prior to deregulation, the passenger airlines carried the majority of air freight in the "belly" of scheduled aircraft or by separate all-cargo operations. Today, most passenger airlines have suspended separate all-cargo operations but still provide air freight services on scheduled passenger aircraft flights. While integrated carriers dominate the domestic air cargo market, freight forwarders and customs brokers remain a key element of the air cargo industry, particularly in international air freight, over-sized, and speciality freight. Freight forwarders deal directly with suppliers, purchasing line-haul transportation from airlines and providing ground transportation. Brokers specialize in processing necessary import/export documents. Air freight truckers provide local pickup and delivery services for passenger airlines and traditional all-cargo carriers, as well as transport international freight to and from major international hub airports.

AIR CARGO SCENARIOS FOR WILLIAMS GATEWAY AIRPORT

In approaching the development of air cargo forecasts for Williams Gateway Airport, it is necessary to examine alternate scenarios which may be realized for air cargo utilization at the airport. The first examines a growth scenario of existing speciality non-scheduled charter activities. A second scenario examines the establishment of a regional distribution station at Williams Gateway Airport.

Speciality Cargo Scenario

The speciality cargo scenario includes non-scheduled charter-type activities of air cargo companies and freight forwarders. Williams Gateway Airport has accommodated this type of service

in the past as air cargo companies have transported goods for local businesses through Williams Gateway Airport. The forecast was developed assuming a typical loading situation of a Boeing 727-200 aircraft with increasing frequency through the planning period. **Table 2H** summarizes enplaned air cargo and operations under this scenario.

TABLE 2H
Forecast Enplaned Air Cargo and Operations

Year	Enplaned Air Cargo (lbs.)	Operations
Historical		
1995	9,083,467	N/A
1996	341,000	N/A
1997	456,853	N/A
1998	142,074	N/A
Speciality Cargo Scenario		
2005	9,070,000	320
2010	12,100,000	420
2015	15,120,000	520
2020	18,140,000	630
Regional Distribution Station Scenario		
2005	15,600,000	780
2010	20,800,000	1,040
2015	26,000,000	1,300
2020	31,200,000	1,560
Planning Forecast		
2005	12,340,000	800
2010	16,450,000	1,100
2015	20,560,000	1,300
2020	24,670,000	1,600

Regional Distribution Station Scenario

Most of the integrated all-cargo airlines have established a network of primary and regional hubs. However, all-cargo carriers do continue to establish regional distribution centers as cargo volumes warrant. This scenario assumes the development of a cargo distribution station for a small package and express cargo carrier at Williams Gateway Airport. This typically involves daily jet service using large air carrier jet aircraft and on occasion a number of smaller feeder aircraft providing service to remote locations. **Table 2H** summarizes enplaned air cargo and operations under this scenario.

AIR CARGO FORECASTS SUMMARY

Similar to passenger enplanements, future air cargo volumes at Williams Gateway Airport will be driven by the expanding regional economy and could potentially be influenced by the ability of Phoenix Sky Harbor International Airport to accommodate long term air cargo growth. In all likelihood, actual activity will not follow any one of the projections exactly. It is more likely that annual enplaned cargo levels will fluctuate within the range of the projections depicted on **Exhibit 2E**. Thus, these lines serve more as a planning envelope. The planning envelope reflects a reasonable range for future annual enplaned air cargo levels at the airport. With this in mind, the time-based projections of anticipated growth should serve only as a guide. At any given time over the planning period, the actual level of enplaned air cargo could fall within the envelope area. The planning forecast is a mid-range forecast to account for annual fluctuations in air cargo levels.

A forecast of air mail has not been prepared. Air mail volumes are primarily a function of airline schedules, air carrier aircraft cargo capacities, and postal service contracts. Typical air mail volumes can be absorbed within the normal baggage handling capabilities of air carriers.

GENERAL AVIATION FORECASTS

To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. Indicators of general aviation demand include: based aircraft, the based aircraft fleet mix, and annual operations.

BASED AIRCRAFT

The number of based aircraft is the most basic indicator of general aviation demand at an airport. By first developing a forecast of based aircraft, the growth of aviation activities at the airport can be projected. Historical information regarding based aircraft at the airport and Maricopa County registered aircraft was obtained from airport records and the *Regional Aviation System Plan (RASP) Implementation Study* (1996) prepared for the Maricopa County Association of Governments (MAG).

Table 2K summarizes historical based aircraft at Williams Gateway Airport. As evidenced in the table, with the exception of 1997, total based have increased annually at the airport.

Similarly, registered aircraft in Maricopa County have steadily increased each year since 1994. Between 1994 and 1997, total registered aircraft in Maricopa County have increased by 455 aircraft, averaging an annual growth rate of 4.4 percent. As shown in **Table 2K**, the percent of Maricopa County registered aircraft based at Williams Gateway Airport has increased since the airport opened in 1994.

TABLE 2K
Historical and Forecast Based Aircraft,
Maricopa County Registered Aircraft, and Market Shares

Year	Maricopa County Registered Aircraft	Williams Gateway Airport Based Aircraft	Percent of Maricopa County Registered Aircraft Based at Williams Gateway
Historical			
1994	2,404	5	0.2%
1995	2,662	23	0.9%
1996	2,801	42	1.5%
1997	2,859	41	1.4%
1998	----	54	----
Forecast			
Constant Share			
2005	3,404	68	2.0%
2010*	3,619	72	2.0%
2015	3,832	77	2.0%
2020*	4,057	81	2.0%
Increasing Share			
2005	3,404	102	3.0%
2010*	3,619	145	4.0%
2015	3,832	192	5.0%
2020*	4,057	243	6.0%

Source for Historical Maricopa County and Based Aircraft Data: ADOT, MAG, Airport Records
Source for Forecast Maricopa County Registered Aircraft: *MAG RASP*
* 2010 and 2020 forecast for Maricopa County registered aircraft extrapolated by Coffman Associates

The *MAG Regional Aviation System Plan* projected Maricopa County registered aircraft to grow to 3,832 by 2015, which would equate to a 1.6 percent annual growth rate from the 1997 figure of 2,859. Assuming a constant, or static share of Maricopa County registered aircraft yields 81 based aircraft by the end of the planning period. Following the historical trend which has seen Williams Gateway Airport increase its share of total Maricopa County registered aircraft and forecast local and regional population and economic growth, it is possible that the airport's share of Maricopa County registered aircraft could increase through the planning period. An increasing market share of Maricopa County registered aircraft yields 243 based aircraft by the end of the planning period.

A second forecasting technique involved the use of a trend line analysis. A trend line analysis pertains to projecting

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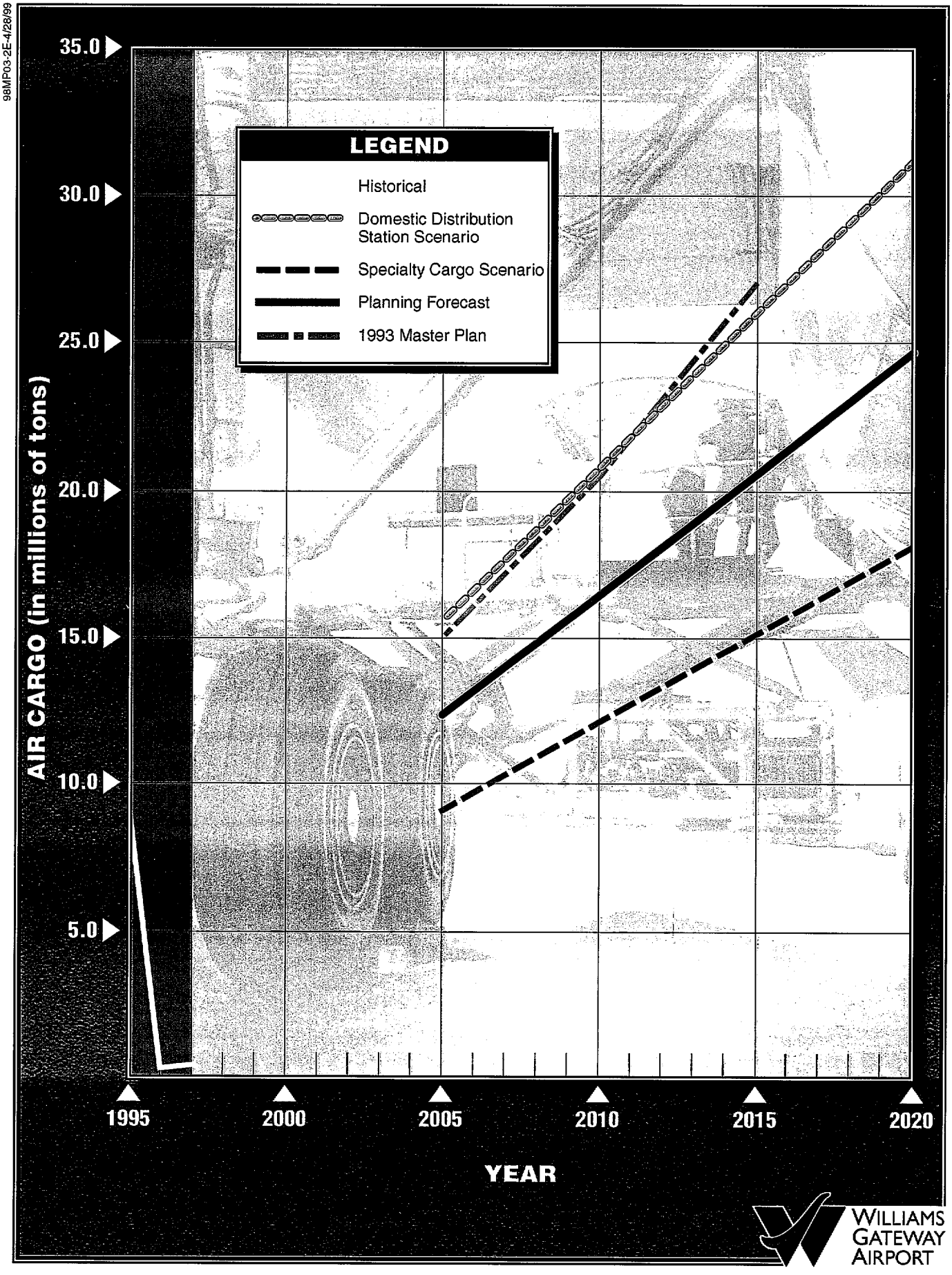

WILLIAMS GATEWAY AIRPORT

Exhibit 2E

ENPLANED AIR CARGO FORECAST

future activity based upon previous trends. As shown in **Table 2L**, the trend line analysis yields 311 based aircraft in 2020.

TABLE 2L
General Aviation Based Aircraft Forecast Summary

	2005	2010	2015	2020
Constant Market Share of Maricopa County Registered Aircraft	68	72	77	81
Increasing Market Share of Maricopa County Registered Aircraft	102	145	192	243
Trend Line Analysis	137	195	253	311
1993 Master Plan	82	98	112	–
1995 SANS	95	125	149	–
1997 FAA TAF	52	57	--	–
Planning Forecast	***100***	***135***	***170***	***210***

The *1997 FAA Terminal Area Forecast, 1995 SANS,* and *1993 Master Plan* provide comparative forecasts. The 1997 TAF uses 1996 base year data and projects based aircraft growing to only 57 by the year 2010. The *1995 SANS* used 1995 base year data and projected based aircraft increasing to 149 by the year 2015. The *1993 Master Plan*, which was prepared before Williams Gateway Airport was opened, projected based aircraft increasing to 112 by 2015.

Presented in **Table 2L**, and on **Exhibit 2F** is a summary of all forecasts of based aircraft at Williams Gateway Airport, including the planning forecast. The planning forecast reflects the airport capturing a larger portion of regional and national aviation markets over the planning period. Continued local and regional economic and population growth supports the long-range potential for based aircraft growth at the airport. The planning forecast projects based aircraft at Williams Gateway Airport growing at an average annual rate of 6.4 percent.

It should be noted that the selected based aircraft forecast represents an unconstrained forecast of potential based aircraft growth for the airport without considering airport facility constraints and policies. While airport facilities are not considered a constraint to based aircraft growth, the principles of the Intergovernmental Agreement (IGA) developed when the Williams Gateway Airport Authority was formed should be considered.

Specifically, the Intergovernmental Agreement placed the following condition on general aviation activity at Williams Gateway Airport: "Property reserved for use by General Aviation Aircraft of 30,000 lbs of certificated gross weight or less (i.e. tie-down areas, hangar spaces, FBOs, or other tenants that principally service or operate such aircraft, etc.) shall be limited to the amount of property determined to be

reasonably necessary by applying FAA design standards to the forecasted General Aviation annual operations. The initial forecast for the year 2015 of 31,000 general aviation operations will be used. It is the FAA's direction that the amount of property reserved for general aviation may be adjusted in the future according to demand." The previous Master Plan determined that 31,000 annual general aviation operations equated to approximately 62 based aircraft (excluding flight training aircraft associated with training programs at the Williams Campus). Future based aircraft growth at Williams Gateway Airport will be dependent upon the extent to which this portion of the IGA is implemented.

BASED AIRCRAFT FLEET MIX

Knowing the aircraft fleet mix expected to utilize the airport is necessary to properly plan facilities that will best serve the level of activity and type of activities occurring at the airport. The existing based aircraft fleet mix is comprised primarily of single-engine piston aircraft, but also includes multi-engine piston, turboprop, jet and helicopter aircraft.

The forecast mix of based aircraft was determined by comparing existing and forecast U.S. general aviation fleet trends to the 1998 based aircraft fleet mix. The *FAA Aviation Forecasts Fiscal Years 1998-2009* was consulted for the U.S. general aviation fleet mix trends and considered in the fleet mix projections. The trend in general aviation is toward a greater percentage of larger, more sophisticated turboprop, jet and helicopters, and a reduction in the percentage of single-engine piston aircraft.

The fleet composition of based aircraft is expected to remain heavily in single-engine piston aircraft, although there is expected to be an increasing percentage of turboprop, jet, and helicopters in the future mix, consistent with national trends. **Table 2M** and **Exhibit 2G** summarize the based aircraft fleet mix projections for the airport.

ANNUAL OPERATIONS

The airport traffic control tower (ATCT) located on the airport collects information regarding aircraft operations (takeoffs and landings). Aircraft operations at the airport are categorized as either local or itinerant by the ATCT. Local operations consist mostly of aircraft training operations conducted within the airport traffic pattern and touch-and-go operations. Itinerant operations are originating or departing aircraft which are not conducting operations within the airport traffic pattern.

Table 2N summarizes historical general aviation operations at Williams Gateway Airport. As evidenced in the table, general aviation operations have steadily increased each year since 1994 at Williams Gateway Airport. The majority of this increase can be attributed to increases in local operations. In 1995 (the first full year of operations), there were 68,698 local operations; in 1997, local operations totaled 106,848. Much of the increase

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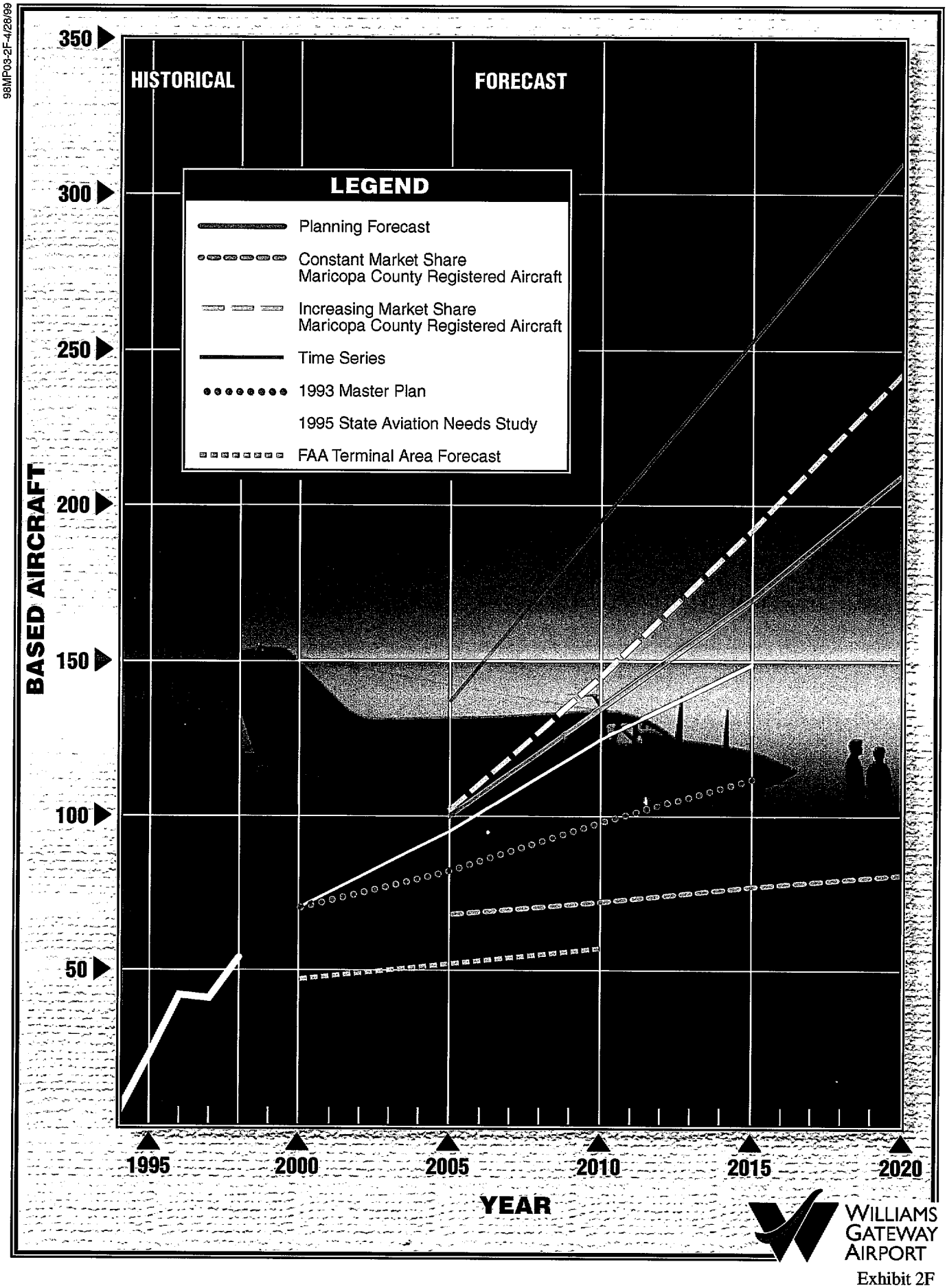

WILLIAMS GATEWAY AIRPORT

Exhibit 2F
BASED AIRCRAFT FORECAST

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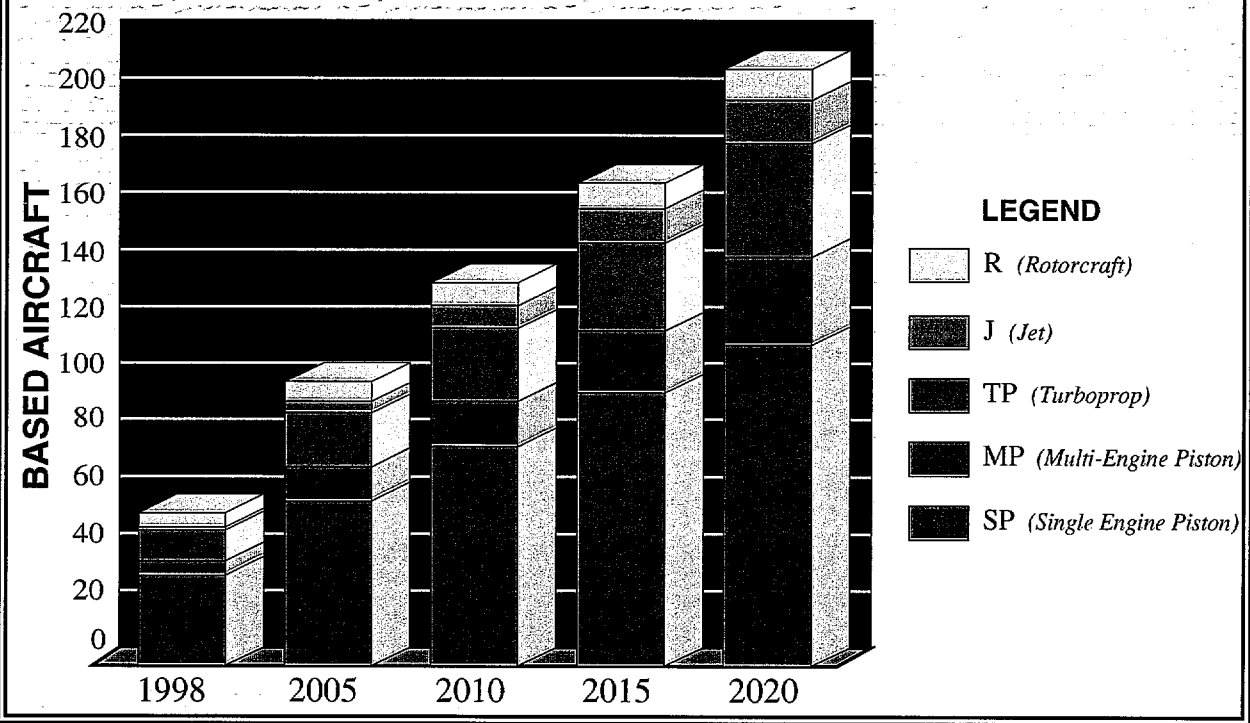
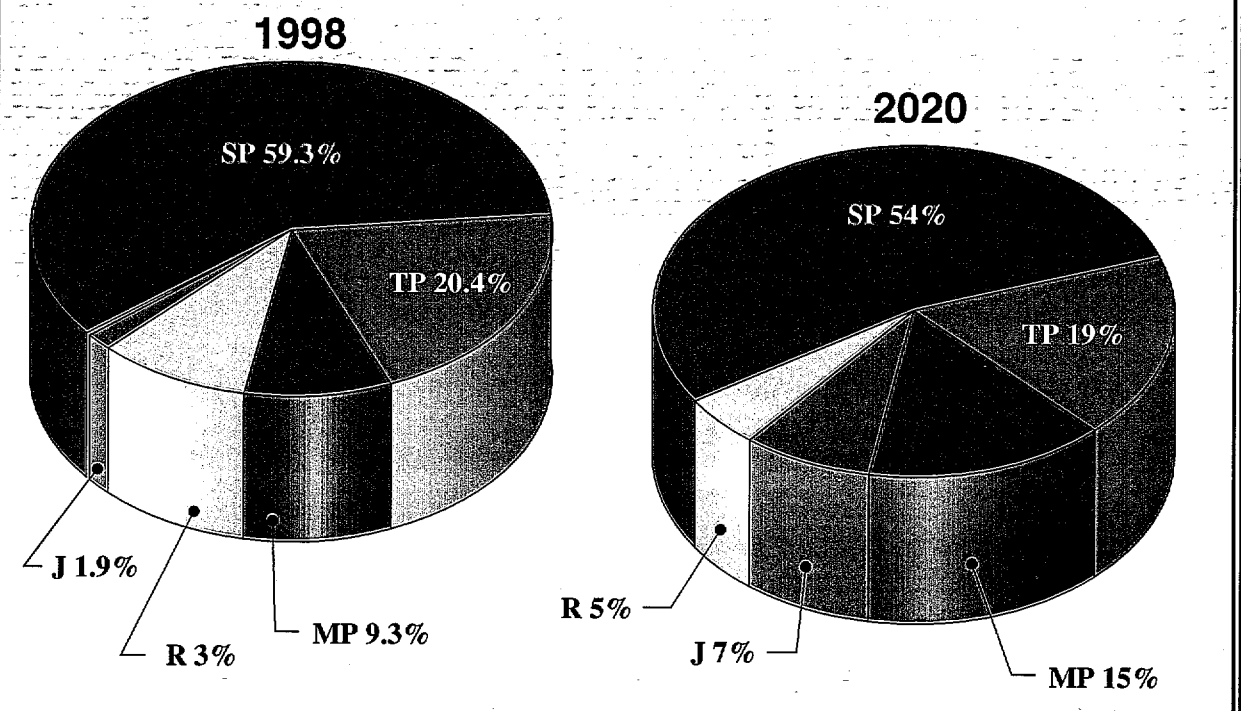
BASED AIRCRAFT



PERCENT BY AIRCRAFT TYPE



WILLIAMS GATEWAY AIRPORT

Exhibit 2G

BASED AIRCRAFT AND FLEET MIX FORECAST

in local operations can be attributed to expansion of aviation flight training programs associated with the colleges on the Williams Campus and flight training activity from other regional airports.

TABLE 2M
Projected Based Aircraft Fleet Mix

Year	Total Based Aircraft	Single Engine	Multi Engine	Turbo Prop	Jet	Helicopter
Historical						
1994	5	2	2	0	1	0
1995	23	11	10	1	1	0
1996	42	33	2	2	4	1
1997	41	28	5	4	1	3
1998	54	32	5	11	1	5
Forecast						
2005	100	58	12	19	4	7
2010	135	77	16	26	8	8
2015	170	96	22	31	12	9
2020	210	113	31	40	15	11

Source for Historical Data: Airport Records

TABLE 2N
General Aviation Operations Per Based Aircraft

Year	Total Operations	Operations per Based Aircraft	Itinerant Operations	Percent of Total Operations	Local Operations	Percent of Total Operations
HISTORICAL						
1994	50,555	10,111	13,078	26%	37,477	74%
1995	91,374	3,973	22,675	25%	68,698	75%
1996	135,357	3,223	43,217	32%	92,140	68%
1997	155,408	3,790	48,560	31%	106,848	69%
FORECAST						
2005	190,000	1,900	58,900	31%	131,100	69%
2010	209,000	1,550	64,800	31%	144,200	69%
2015	230,000	1,350	71,300	31%	158,700	69%
2020	252,000	1,200	78,100	31%	173,900	69%

Source for Historical Data: Airport Records

Typically, annual operations per based aircraft can range between 300 and 800 at general aviation airports. Airport's with high levels of training activity, or

local operations, will have a higher operation per based aircraft ratio, whereas, airport's utilized by a higher percentage of transient aircraft will have lower ratios. Mesa Falcon-Field and Phoenix Deer Valley Airports have historically averaged between 300 and 400 operations per based aircraft. While these airports experience a higher percentage of local operations than itinerant operations, they have considerably higher numbers of based aircraft.

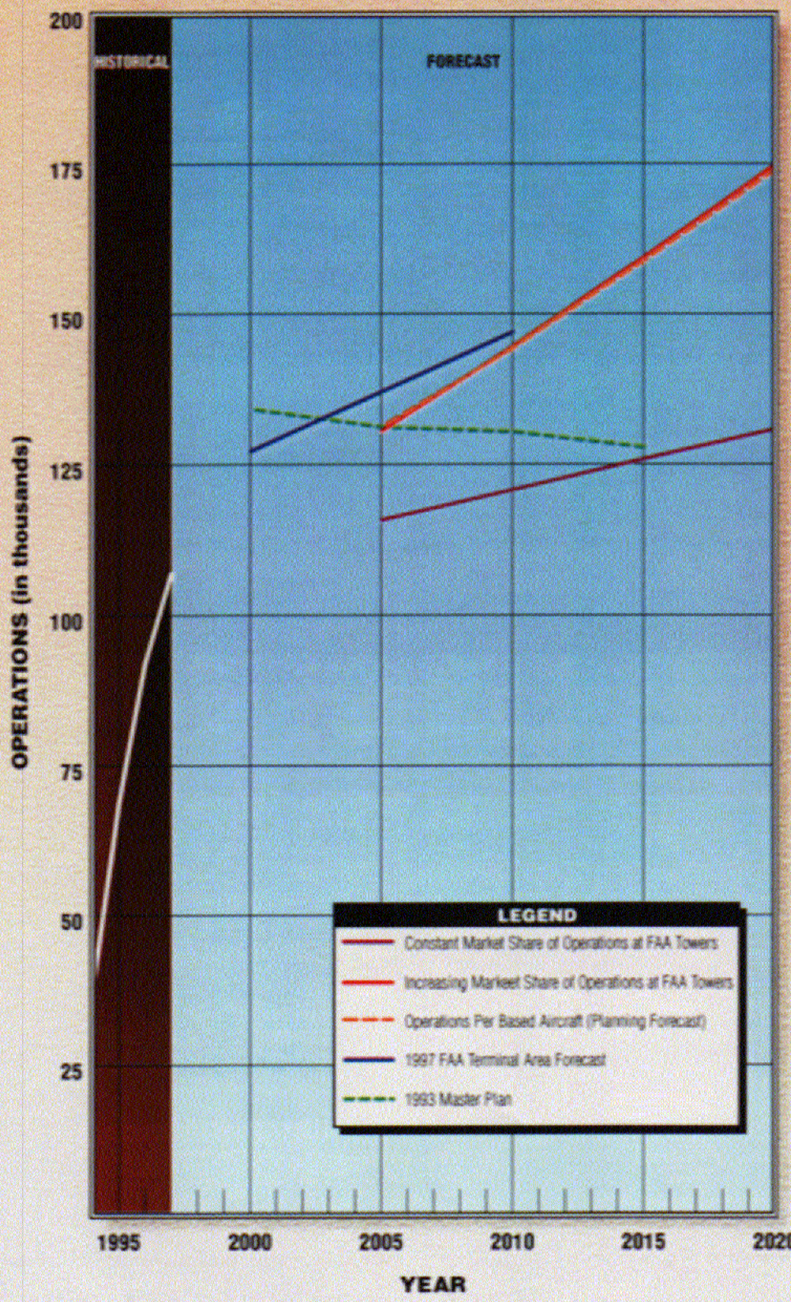
Due to the significant number of training operations at Williams Gateway Airport and lower based aircraft levels, operations per based aircraft at Williams Gateway Airport are considerably higher than these typical averages. Considering the fact that forecast increased based aircraft levels typically provide for a lower ratio of operations per based aircraft, a projection of future annual operations has been developed assuming a decline in the number of operations per based aircraft over the planning period. Local and itinerant operations have been projected based on their 1997 percentage share of total annual operations.

A second forecasting technique examines the airport's general aviation operational levels as a percentage of historical and forecast general aviation operations at all towered airports across the country. As shown in **Table 2P**, the airport's share of total itinerant operations at all towered airports across the country has remained relatively static since 1994 with the exception of 1995 which saw a sharp annual increase in itinerant operations at the airport. Local operations have increased their share of total local operations at all towered airports across the country each year. Separate projections of itinerant and local operations have been developed by examining constant and increasing shares of both total itinerant and total local operations across the country.

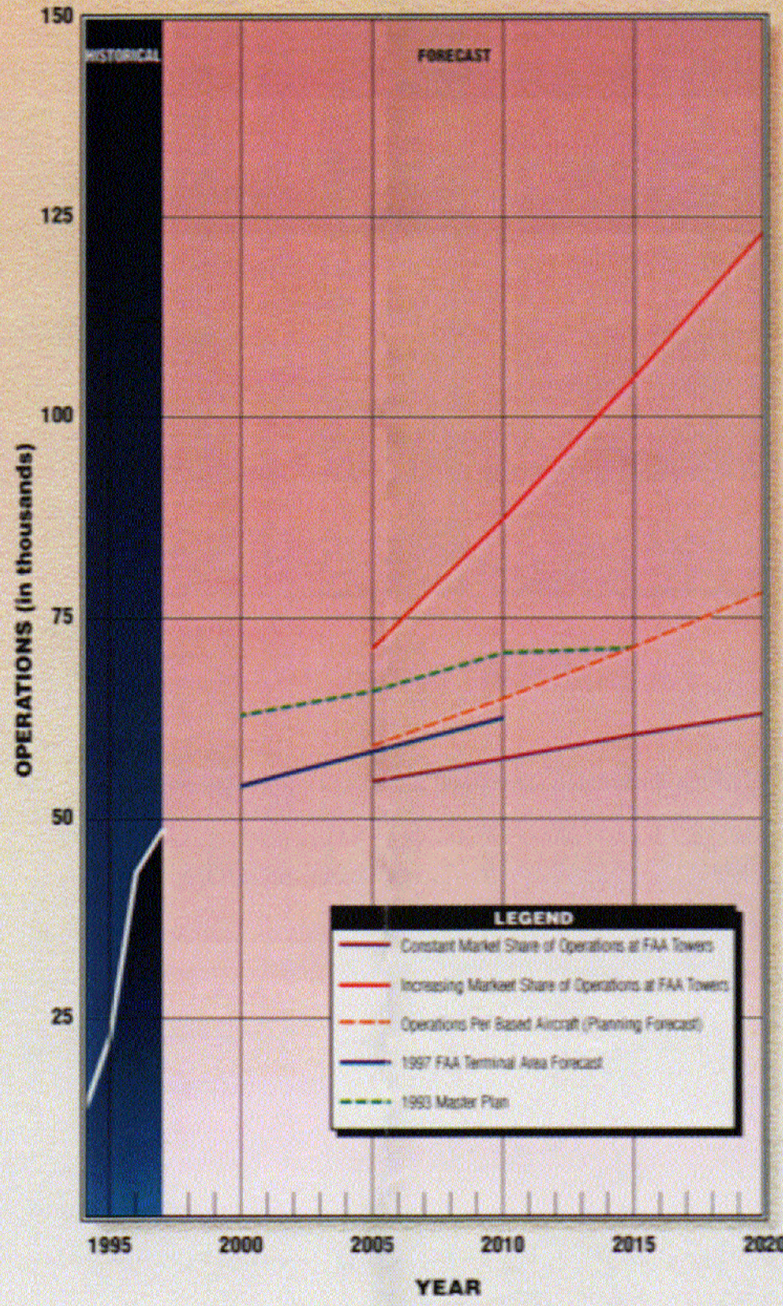
Also considered are the forecasted operational levels for Williams Gateway Airport presented in the *1997 FAA TAF*, and *1993 Master Plan*. The *1997 FAA TAF* projects annual operations at Williams Gateway Airport growing to 209,472 by 2010. The 1993 Master Plan projected annual operations growing to 201,011 by 2010 and then declining slightly to 199,000 by 2015 as projected commercial operations increased. These forecasts are presented in **Table 2Q**.

Exhibit 2H and **Table 2Q** summarize the operations forecasts developed for Williams Gateway Airport. The selected planning forecast is a combination of two separate forecasts. The selected itinerant operations planning forecast is the forecast developed under the operations per based aircraft. The selected local operations planning forecast is the forecast developed as an increasing percentage of local operations at the combined FAA and Contract towers which reflects the recent trends at Williams Gateway Airport.

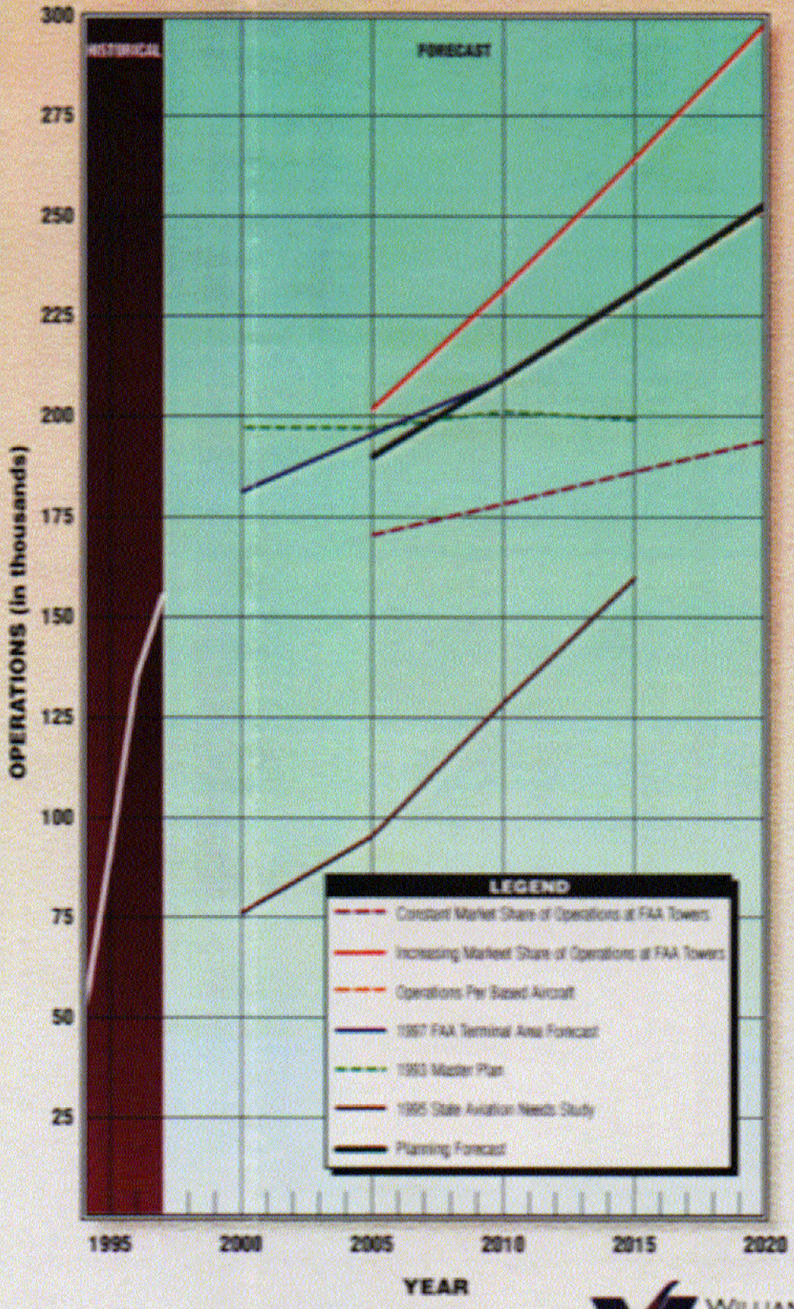
LOCAL GENERAL AVIATION OPERATIONS



ITINERANT GENERAL AVIATION OPERATIONS



TOTAL GENERAL AVIATION OPERATIONS



WILLIAMS GATEWAY AIRPORT

Exhibit 2H
GENERAL AVIATION
OPERATIONS FORECAST

TABLE 2P
Historical and Forecast General Aviation Operations
Williams Gateway Airport, Total Operations at Combined FAA and Contract Towers

	Itinerant Operations			Local Operations			
Year	Gateway Operations	Total FAA Operations	Percent of FAA	Gateway Operations	Total FAA Operations	Percent of FAA	Total Gateway
HISTORICAL							
1994	13,078	21,063,200	0.06%	37,477	15,190,500	0.25%	88,032
1995	22,675	20,860,400	0.11%	68,698	15,066,200	0.46%	160,071
1996	43,217	20,823,000	0.21%	92,140	14,475,300	0.64%	135,357
1997	48,560	21,546,200	0.23%	106,848	15,077,100	0.71%	155,408
CONSTANT SHARE							
2005	54,500	23,700,000	0.23%	115,700	16,300,000	0.71%	170,200
2010	57,300	24,900,000	0.23%	120,700	17,000,000	0.71%	178,000
2015	60,300	26,200,000	0.23%	125,700	17,700,000	0.71%	186,000
2020	63,000	27,400,000	0.23%	130,600	18,400,000	0.71%	193,600
INCREASING SHARE							
2005	71,100	23,700,000	0.30%	130,400	16,300,000	0.80%	201,500
2010	87,200	24,900,000	0.35%	144,500	17,000,000	0.85%	231,700
2015	104,800	26,200,000	0.40%	159,300	17,700,000	0.90%	264,100
2020	123,300	27,400,000	0.45%	174,800	18,400,000	0.95%	298,100

Source for Historical Williams Gateway Airport and FAA Tower Operations: Airport Records, FAA Aviation Forecast 1998-2009
Source for Forecast FAA Operations: FAA Long Range Aviation Forecasts

The national trend is for a greater number of itinerant general aviation operations driven by greater use of general aviation aircraft for business and corporate uses. The available runway length, apron areas, airport services, and local economic growth should lead to the airport experiencing a greater number of itinerant operations through the planning period as business and corporate aircraft begin to use the airport in support of local economic growth. These trends contributed to the selection of the preferred itinerant operations planning forecast.

Local operations should continue to grow as flight training programs associated with colleges located at the Williams Campus expand. This contributed to the selection of the preferred local operations planning forecast.

While the previous Master Plan anticipated that increases in commercial activity may ultimately decrease local operations, the availability of widely spaced runways and a larger commercial fleet mix (which reduces the number of annual commercial service operations) should allow the airport to fully serve local training operations. Increased based aircraft levels are expected to add to both itinerant and local operational levels.

TABLE 2Q
General Aviation Operations Forecast Summary

Year	Total Operations	Itinerant Operations	Percent of Total	Local Operations	Percent of Total
HISTORICAL					
1994	50,555	13,078	26%	37,477	74%
1995	91,374	22,675	25%	68,698	75%
1996	135,357	43,217	32%	92,140	68%
1997	155,408	48,560	31%	106,848	69%
OPERATIONS PER BASED AIRCRAFT					
2005	190,000	58,900	31%	131,100	69%
2010	209,000	64,800	31%	144,200	69%
2015	230,000	71,300	31%	158,700	69%
2020	252,000	78,100	31%	173,900	69%
CONSTANT SHARE OF TOTAL OPERATIONS AT COMBINED FAA AND CONTRACT TOWERS					
2005	170,200	54,500	32%	115,700	68%
2010	178,000	57,300	32%	120,700	68%
2015	186,000	60,300	32%	125,700	68%
2020	193,600	63,000	32%	130,600	68%
INCREASING SHARE OF TOTAL OPERATIONS AT COMBINED FAA AND CONTRACT TOWERS					
2005	201,500	71,100	35%	130,400	65%
2010	231,700	87,200	37%	144,500	63%
2015	264,100	104,800	39%	159,300	61%
2020	298,100	123,300	41%	174,800	59%
FAA TERMINAL AREA FORECAST					
2000	127,062	54,054	42%	181,116	58%
2005	137,008	58,285	42%	195,293	58%
2010	146,955	62,517	42%	209,472	58%
1993 MASTER PLAN					
2000	197,000	62,900	32%	134,100	68%
2005	197,000	65,900	33%	131,100	67%
2010	201,000	70,700	35%	130,300	65%
2015	199,000	71,300	36%	127,700	64%

The selected itinerant operations forecast projects itinerant operations at Williams Gateway Airport growing at an average annual rate of 2.1 percent through the year 2020. The selected local operations forecast projects local operations at Williams Gateway Airport increasing at an average annual rate of 2.2 percent. Total annual operations

are projected to increase at an average annual rate of 2.1 percent. The selected planning forecast is presented in **Table 2R.**

TABLE 2R
General Aviation Operations Planning Forecast

Year	Total Operations	Itinerant Operations	Percent of Total	Local Operations	Percent of Total
PLANNING FORECAST					
2005	189,300	58,900	31%	130,400	69%
2010	209,300	64,800	31%	144,500	69%
2015	230,600	71,300	31%	159,300	69%
2020	252,900	78,100	31%	174,800	69%

AIR TAXI OPERATIONS

Air taxi operations normally consists of the use of general aviation type aircraft for the "on demand" commercial transport of persons and property in accordance with Federal Aviation Regulations (FAR) Part 135. Air taxi operations have been independently reported by air traffic control towers since 1972. The recording of air taxi operations includes commuter passenger and all-cargo airlines, as well as for-hire general aviation operations. Prior to October, 1995, when air traffic control was turned over to the FAA from the National Guard, air carrier traffic was included in air taxi numbers. This led to an overstatement of air taxi operations for the airport during this period.

Table 2S summarizes historical air taxi operations as recorded by the air traffic control tower and their percentage of total annual operations. For purposes of this analysis, air carrier operations reported between 1995 and 1997 have been included in the air taxi projections. As a percentage of total operations, non-scheduled air taxi operations represented 1.6 percent of total annual operations in 1997. For planning purposes, air taxi operations were forecast applying this percentage to forecast total projected operations (air carrier, air cargo, military, and general aviation).

MILITARY OPERATIONS

Projecting future military utilization of an airport is particularly difficult since local missions may change with little notice. However, existing operations and aircraft mix may be confirmed for their impact on facility planning. Most military operations at the airport currently consists of local operations conducted primarily by the 161st Refueling Group of the Arizona Air National Guard based at Phoenix Sky Harbor International Airport and various other military aircraft based in Arizona.

TABLE 2S
Historical and Projected Air Taxi Operations

Year	Air Taxi Operations	Total Operations	Percent of Total Operations
HISTORICAL			
1994	1,930	107,903	1.7%
1995	4,809	194,823	2.4%
1996	2,369	156,961	1.5%
1997	3,011	186,409	1.6%
FORECAST			
2005	3,700	228,500	1.6%
2010	4,100	257,400	1.6%
2015	4,700	291,100	1.6%
2020	5,300	332,900	1.6%

TABLE 2T
Historical Military Operations

Year	Total Operations	Itinerant	Local
HISTORICAL			
1994	10,403	2,865	7,538
1995	18,410	6,877	11,533
1996	19,235	4,733	14,502
1997	27,990	4,774	23,216
1997 FAA TAF			
2000	24,228	4,482	19,746
2005	24,228	4,482	19,746
2010	24,228	4,482	19,746
1993 MASTER PLAN			
2000	29,100	11,500	17,600
2005	29,100	11,500	17,600
2010	29,100	11,500	17,600
2015	29,100	11,500	17,600
PLANNING FORECAST			
2005	33,000	5,000	28,000
2010	33,000	5,000	28,000
2015	33,000	5,000	28,000
2020	33,000	5,000	28,000

Source for Historical Data: Airport Records

As shown in **Table 2T**, total military operations have increased annually since 1994. Consistent with standard planning practices, military operations are forecast at static levels through the planning since it is difficult to predict the pattern of military operations due to the ever-changing missions of military forces. Therefore, for planning purposes, military operations are forecast at 33,000 annual operations through the planning period with 5,000 attributed to itinerant traffic and 28,000 to local traffic to account for the possibility of some continued growth in military use of the airport.

PEAKING CHARACTERISTICS

Most facility planning relates to levels of peak activity. The following planning definitions apply to the key peak periods:

- **Peak Month** - The calender month when peak passenger enplanements or aircraft operations occur.
- **Design Day** - The average day in the peak month.
- **Busy Day** - The busy day of a typical week in the peak month.
- **Design Hour** - The peak hour within the design day.

It is important to recognize that only the peak month is an absolute peak within a given year. All the others will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

AIRLINE PEAKING CHARACTERISTICS

Airline peaking characteristics were determined according to trends experienced at similar airports across the country since the airport has not been served by air carrier activity in the past. Typically, the peak month for passenger enplanements approximates 10-12 percent of the airport's annual enplanements. Peak month enplanements were determined assuming 10 percent of forecast annual enplanements. Design day enplanements were calculated by dividing the peak month by 30. Hourly peak periods are important factors for the provision of adequate departure and waiting areas. Design hour enplanements were calculated as 45 percent of design day enplanements, declining slightly over the planning period as the frequency of flights is expected to increase at the airport.

Typically, peak month operations approximate 10-12 percent of total annual operations. Peak month operations were calculated assuming 10 percent of forecast annual operations. Design day operations were calculated by dividing the peak month by 30. Typically, peak hour operations account for 15-20 percent of design day activity. Peak hour operations were calculated as 16 percent of the design day. **Table 2V** summarizes airline peaking characteristics for the airport through the planning period.

GENERAL AVIATION PEAKING CHARACTERISTICS

The peak month for recorded general aviation operations in 1997 was March with 19,418 operations, 12.5 percent of total general aviation operations in 1997. This percentage was applied to forecast general aviation operations to derive future peak month estimates. The forecast of busy day operations was calculated as 1.25 times design day activity. Design hour operations were calculated as 13 percent of design day operations. **Table 2V** summarizes general aviation peak activity forecasts for the airport.

TABLE 2V
Peak Period Forecasts

	1997	2005	2010	2015	2020
Airline Enplanements					
Annual	N/A	250,000	650,000	1,200,000	2,000,000
Peak Month	N/A	25,000	65,000	120,000	200,000
Design Day	N/A	833	2,167	4,000	6,667
Design Hour	N/A	333	758	1,200	1,333
Airline Operations					
Annual	N/A	5,400	14,000	26,200	45,400
Peak Month	N/A	540	1,400	2,620	4,540
Design Day	N/A	18	47	87	151
Design Hour	N/A	3	7	13	23
General Aviation Operations					
Annual	155,408	189,300	209,300	230,600	252,900
Peak Month	19,418	23,560	26,150	28,800	31,600
Busy Day	809	985	1,090	1,200	1,317
Design Day	647	788	872	960	1,053
Design Hour	84	102	113	125	137

FORECAST SUMMARY

This chapter has outlined the various aviation demand levels anticipated over the planning period. Long-term aviation growth at Williams Gateway Airport will be sustained by growth in the local economy and the trends experienced at the national level.

A forecast of annual instrument approaches (AIAs) has not been prepared because of the historical low levels of AIAs conducted in the region, and the fact that inclement weather conditions only occur a very small portion of time in this type of climate. For example, in 1994 (the last year of published data) only 227 AIAs were recorded at Phoenix Sky Harbor International Airport, the busiest airport in the region. In fact, FAA records do not indicate any historical AIAs for Williams Gateway Airport.

Anticipated activity at Williams Gateway should produce a greater number of AIAs in the future as air carrier and air cargo activity increases at the airport. However, this activity is not expected to exceed levels experienced at the busier Phoenix Sky Harbor International (which falls well below planning thresholds established by the FAA for FAA funded approach equipment).

The next step in the master planning process will be to assess the capacity of existing facilities, their ability to meet forecast demand, and to identify changes to the airfield or landside facilities which will create a more functional facility. The aviation forecasts have been summarized in **Table 2V**.

TABLE 2V
Forecast Summary

	1997	2005	2010	2015	2020
Annual Enplanements	0	250,000	650,000	1,200,000	2,000,000
Enplaned Cargo (lbs.)	456,853	12,340,000	16,450,000	20,560,000	24,670,000
Based Aircraft					
Single Engine Piston	32	58	77	96	113
Multi-Engine Piston	5	11	16	22	31
Turboprop	11	19	26	31	38
Turbojet	1	5	8	12	17
Helicopter	5	7	8	9	11
Total Based Aircraft*	54	100	135	170	210
Annual Operations					
Itinerant					
Commercial Service	0	5,400	14,000	26,200	45,400
Air Cargo	N/A	800	1,100	1,300	1,600
Air Taxi	3,011	3,700	4,100	4,700	5,300
General Aviation	48,560	58,900	64,800	71,300	78,100
Military	4,774	5,000	5,000	5,000	5,000
Total Itinerant	56,345	73,800	89,000	108,500	135,400
Local					
General Aviation	106,848	130,400	144,500	159,300	174,800
Military	23,213	28,000	28,000	28,000	28,000
Total Local	130,064	158,400	172,500	187,300	202,800
Total Annual Operations	186,409	232,200	261,500	295,800	338,200

* June 1998